NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
SOUTH DAKOTA SUPPLEMENTS ITALICIZED

RESIDUE MANAGEMENT, RIDGE TILL

(Ac.)
CODE 329C

DEFINITION

Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface year-round, while growing crops on preformed ridges alternated with furrows protected by crop residue.

PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

Reduce sheet and rill erosion.

Reduce wind erosion.

Maintain or improve soil organic matter content and tilth.

Manage snow to increase plant available moisture.

Modify cool wet site conditions.

Provide food and escape cover for wildlife

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

This standard includes tillage and planting methods commonly referred to as ridge till or ridge planting. It does not include no till planting on ridges, or bedding or listing operations which bury crop residues.

CRITERIA

General Criteria Applicable to All Purposes Named Above

Following crop harvest and any secondary residue removal, residues shall be maintained until planting with no additional disturbance except for normal weathering.

Ridge height shall be maintained throughout the harvest and winter seasons by controlling equipment or livestock traffic.

After planting, residues shall be maintained in the furrows until the ridges are rebuilt by cultivation. Ridges shall be rebuilt to their original height and shape during the last row cultivation.

Loose residues to be retained on the field shall be uniformly distributed on the soil surface. *Combines shall be equipped with spreaders capable of redistributing residue over at least 80 percent of the working width of the header.* Cultivation and planting equipment designed to operate on ridges shall be used, such as cultivators equipped with ridging attachments, and planters equipped with ridge planting attachments such as row cleaning devices and guidance systems.

Additional Criteria to Reduce Sheet and Rill Erosion

The amount and placement of residue needed, and the orientation of ridges in relation to the contour, *to reduce erosion within the soil loss tolerance (T) or any other planned soil loss objective,* shall be determined using current approved erosion prediction technology. Calculations shall account for the effects of other practices in the conservation management system. Partial removal of residue by means such as baling or grazing, shall be limited to retain the amount needed.

Planting and fertilizer placement shall disturb no more than one third of the row width. Soil and residue removed from the top of the ridge shall be moved into the furrow between the ridges.

After planting, the top of the ridge shall be maintained at least three inches higher than the furrow between the ridges.

The ridge shall be shaped to prevent erosion along the row by directing runoff to the protected furrow area.

Additional Criteria to Reduce Wind Erosion

The amount and orientation of residue needed during periods when wind erosion is expected to occur, *to reduce erosion within soil loss tolerance (T) or any other planned soil loss objective,* shall be determined using current approved wind erosion prediction technology. Partial removal of residue by means such as baling or grazing, shall be limited to retain the amount needed. Calculations shall account for the effects of ridge height, spacing, and direction, and of other practices in the conservation management system.

Additional Criteria to Maintain or Improve Soil Organic Matter Content and Tilth

The amount of residue needed to achieve the desired soil condition, shall be determined *on a field-by-field basis. It will not be less than the equivalent of the residue produced by a rotation of 50 percent high residue crops*. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed. Calculations shall account for the effects of other practices in the conservation management system.

Cultivation to rebuild ridges shall be done using tools which maintain residues in the surface layer.

Additional Criteria to Manage Snow to Increase Plant Available Moisture

Stubble shall be left standing as high as possible by the harvesting operation, but not less than six inches in any case. Stubble shall be maintained standing over winter to trap and retain snow. In cases where the 6 inch stubble height cannot be achieved, ridges shall be oriented not to exceed 45 degrees from perpendicular to the prevailing wind direction during periods of expected snow cover.

Additional Criteria To Modify Cool Wet Site Conditions

Ridge height prior to planting shall not be less than six inches. After planting, the top of the ridge shall be maintained at least three inches higher than the furrow between the ridges.

Additional Criteria to Provide Food and Escape Cover for Wildlife

The amount of residue and height of stubble needed to provide cover during winter months shall be determined using an approved *wildlife management plan*. Residues shall not be removed unless it is determined by the *wildlife management plan* that removal will not adversely affect habitat values. Stubble shall be maintained standing over winter.

CONSIDERATIONS

Burning of plant residue or excess removal of residue by such means as baling or grazing often produces negative impacts on resources. These activities should not be performed without full evaluation of impacts on soil, water, animal, plants, and air resources.

Ridge till may be practiced continuously throughout some crop sequences, or may be managed as part of a residue management system which includes other tillage and planting methods such as mulch till or no till. In mixed systems, ridges must be periodically re-established.

Production of adequate amounts of crop residues necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, use of cover crops, and adjustment of plant populations and/or row spacings.

By providing a choice of weed control methods, this practice can reduce herbicide requirements when used in a conservation management system.

Where improvement of soil tilth is a concern, continuous ridge planting will allow organic material to accumulate in the surface horizon. Reconstruction of ridges in the same row area year after year will maximize organic matter buildup and biological activity in the row.

Soil compaction may be reduced by controlled traffic, where wheel traffic from all operations is limited to the area between designated rows or traffic areas.

Where ridges direct runoff to areas of concentrated flow, these areas can be protected by grassed waterways, water and sediment control basins, underground outlets, or other suitable practices.

The value of residues for wildlife habitat can be enhanced by leaving rows of unharvested crop standing at intervals across the field.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria,

Considerations, and Operation and Maintenance described in this standard. Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

No operation and maintenance requirements have been identified for this practice.